Contains No CBI

PHILLIPS PETROLEUM COMPANY
BARTLESVILLE, OKLAHOMA 74004 918 661-6600

HEALTH, ENVIRONMENT AND SAFETY

"Contains NO CBI"

August 24, 1992

Compliance Audit Program
CAP ID#: 8ECAP-0075

1992 SEP -2 PM 1:19
OTS CBIC

CERTIFIED MAIL - RETURN RECEIPT

8EHQ-92-12539

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Document Processing Center (TS-790)
Office of Pollution Prevention and Toxics
Environmental Protection Agency
401 M Street, SW
Washington, D. C. 20460

Attn: Section 8(e) Coordinator
(CAP Agreement)

Gentlemen:

Phillips Petroleum Company is submitting the enclosed sixty (60) reports (two boxes, numbered 1 and 2) of toxicological studies pursuant to catagory II.B.2.b of the CAP Agreement 8ECAP-0075 Reports. Reports being submitted contain no confidential business information.

We are sending an additional five boxes (box numbers 3-7) of reports of studies that have, previously, been submitted to the FYI coordinator of the Office of Pollution Prevention and Toxics by the American Petroleum Institute (API). These are being provided solely for the Agency's convenience.

For questions concerning this correspondence, plese contact Fred Marashi at 918-661-8153.

Very truly yours,

Barbara J. Price
Vice President
Health, Environment & Safety

3/17/95

Enclosure (Seven Boxes)

FFM/dh:29

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PHILLIPS PETROLEUM COMPANY
BARTLESVILLE, OKLAHOMA 74004 918 661-6600

HEALTH, ENVIRONMENT AND SAFETY

"Contains NO CBI"

August 24, 1992

Compliance Audit Program
CAP ID#: 8ECAP-0075

1992 SEP -2 PM 1:16
OTS CBIC

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Enclosure (Seven Boxes)

FFM/dh:29

Title of Study: Subacute Dermal Toxicity API 78-8 #6 Heavy Fuel Oil (API Gravity 23.1/0.2% S)

Name of Chemical: No. 6 Heavy Fuel Oil (API Gravity 23.1/0.2% S)

CAS#: 68553-00-4

Summary: Dermal application of No. 6 Heavy Fuel Oil 5 days per week for two weeks produced histopathological changes in the liver and urinary bladder in the rabbit.

Contact:

Fred Marashi
Phillips Petroleum Company
13 D2 PB
Bartlesville, OK 74004
Phone: 918/661-8153
Fax: 918/661-5664

BIORESEARCH LABORATORIES
August 8, 1980

Project No. 1443-F

Subacute Dermal Toxicity
API 78-8
#6 Heavy Fuel Oil (API Gravity 23.1/0.2%S)

OBJECTIVE:

The study described herein was conducted to evaluate the dermal toxicity of the test material when applied in repeated doses over a period of two weeks.

MATERIALS AND METHODS:

1. Test Material:

The test material, a viscous liquid in a metal container identified as API 78-8, #6 Heavy Fuel Oil (API Gravity 23.1/0.2%S), was received by Elars on October 8, 1979. The concentration, purity, and stability were not provided by the sponsor. The test material was stored in Elars test material storage room.

2. Animals:

The dose group and the control group consisted of eight adult New Zealand White rabbits, four males and four females, weighing between 2 and 4 kg. The rabbits were purchased from Stevinson Rabbitry, Stevinson, California, Pel-Freez Farms, Rogers, Arkansas, and Elkhorn Rabbitry, Elkhorn, California, and were identified individually by metal ear tags and corresponding cage tags. The rabbits were allowed to acclimate at Elars at least one week. Purina Rabbit Chow® and fresh water were provided ad libitum. Throughout acclimation and testing, the rabbits were housed individually in standard laboratory rabbit cages.

3. Method:

Prior to application of test material, the rabbits were shaved free of hair with a number 40 Oster® clipper blade. The shaved area on each animal constituted about 30 percent of the total body surface area.

The daily dosage used for this compound was 8 ml/kg body weight, and an untreated control group. The rabbits were exposed to the test material for five consecutive days followed by a two day rest period and then again for five consecutive days. The test material was applied to four-inch square gauze sponges backed by plastic wrap. The sponges and plastic wrap were taped to the shaved area of the animals' back with porous adhesive tape. The entire trunk of each rabbit was wrapped with elastic tape to prevent slippage of the patches. The rabbits remained bandaged for 24 hours, at which time the patches were removed and a new dose of test material was applied. This procedure was followed each day of the five day dosing period. During the two day rest period the animals were not dosed.

Observations for mortality, local reactions, and behavioral abnormalities were made daily during the 14 day period. Initial and final body weights were recorded.

Any animals which succumbed during the study as well as those killed with T-61® at the termination of the study were subjected to necropsy, and all significant gross pathological alterations were recorded. In addition, the following tissues were submitted for histopathologic examination: skin from the test site, liver, kidney, spleen and urinary bladder.

The collected tissues were fixed in 10% neutral buffered formalin. Afterwards, the tissues were trimmed, embedded in paraffin, sectioned at 4 to 5 microns, affixed to glass slides, and stained with hematoxylin and eosin. Histopathologic examination of the submitted tissues was conducted at Westpath Laboratories by William H. Halliwell, D.V.M., Ph.D., Diplomate: ACVP.

RESULTS:

Individual animal weights and doses are given in Tables 1 and 2 for the 8 ml/kg dosage level and the control, respectively. The most significant daily observation recorded at the 8 ml/kg test level was erythema and irritation at the test site. Observation was difficult due to the staining of the test site by the test material.

The animals in the 8 ml/kg group showed decreased appetites and became emaciated, with an average weight loss of 0.48 kg; this dosage group produced 25% mortality. An average weight gain of 0.20 kg was observed for the control group; no mortality was observed.

The gross postmortem examinations of treated rabbits that died on study showed one rabbit with a swollen, necrotic liver and congested kidneys. A second rabbit exhibited a yellow discolored, friable liver and a large mass of clotted blood from the descending colon. Gross necropsy of rabbits surviving the 14-day observation showed all rabbits with abnormal liver observations including livers that were pale, yellow, congested or mottled. Also, two rabbits exhibited pale kidneys, two rabbits had congested kidneys, and two rabbits had enlarged spleens.

The histopathologic diagnoses of selected tissues from rabbits exposed to 8 ml/kg of test material API 78-8 and from untreated control rabbits are

presented in Tables 3 and 4, respectively. The test material produced, at the test site (skin): acanthosis, chronic inflammation, crusting, dermal congestion, dermal edema, and hyperkeratosis that varied in severity from very slight to moderate.

The liver from seven of eight treated rabbits contained evidence of multifocal necrosis that varied in degree of insult from very slight to severe. Three of the same treated rabbits revealed centrilobular vacuolar degeneration in the liver that varied in severity from very slight to slight. Evidence of epithelial hyperplasia of the urinary bladder mucosa was diagnosed in four of the eight animals that varied in severity from very slight to slight.

CONCLUSIONS:

The test material, API 78-8, #6 Heavy Fuel Oil (API Gravity 23.1/0.2%S), caused slight dermal irritation and resulted in obvious treatment-related signs during the 14 day observation period and at necropsy in the species examined.

Histopathologic examination of tissues from rabbits exposed to 8 ml/kg of the test material (API 78-8) revealed evidence of dermal and hepatic toxicity and proliferative changes in the transitional epithelium of the urinary bladder. These changes were attributed to exposure of the test material.

The dermal LD_{50} for the test material is greater than 8 ml/kg.

PERSONNEL:

Personnel responsible for the collection and interpretation of data generated in the course of this study were Vicki J. Mills, B.S., Toxicology Technician, Study Coordinator; L. Steven Beck, D.V.M., M.S., Assistant

Director of Toxicology, Study Director; Denice E. Morita, B.S., Irma Albinana, and Kris L. Hansen, B.S., M.S., Toxicology Technicians; Terry A. Hewett, B.S., Laboratory Assistant; Douglas I. Hopler, Ph.D., Director of Toxicology; and William H. Halliwell, D.V.M., Ph.D., Pathologist.

RAW DATA:

Raw data regarding this study are to be found in Elars' notebooks #239 and #1505 in file #1443-F.

Table 1

Individual Animal Weights and Dosages
Dosage Level 8 ml/kg, 25% Mortality

May 26, 1980

Animal Number	Sex	Body Wt. Day 0 (kg)	Dose (ml)	Body Wt. Terminal	Weight Gain (kg)	Termination Day
969	M	3.4	27.2	2.9	-0.5	14
985	M	3.9	31.2	3.6	-0.3	9
987	M	3.2	25.6	2.8	-0.4	14
1123	M	2.6	20.8	2.3	-0.3	14
954	F	3.9	31.2	3.2	-0.7	14
958	F	3.3	26.4	2.7	-0.6	14
962	F	3.3	26.4	2.6	-0.7	14
964	F	2.8	22.4	2.5	-0.3	8

Table 2

Individual Animal Weights and Dosages
Dosage Level Control, 0% Mortality

May 21, 1979

Animal Number	Sex	Body Wt. Day 0 (kg)	Dose (ml)	Body Wt. Terminal	Weight Gain (kg)	Termination Day
421	M	2.4	—	2.5	0.1	14
423	M	2.3	—	2.7	0.4	14
425	M	2.4	—	2.5	0.1	14
427	M	2.5	—	2.7	0.2	14
422	F	2.7	—	2.9	0.2	14
424	F	2.7	—	3.0	0.3	14
426	F	2.7	—	2.9	0.2	14
428	F	2.4	—	2.5	0.1	14

Westpath Laboratories, Inc.
Project Number 1014

Table 3

Elars Bioresearch Laboratories
Project Number 1443-F
API 78-8

INDIVIDUAL HISTOLOGIC OBSERVATIONS

8 ml/kg/day

Accession Number (80-)	1142	1143	1144	1145	1146	1147	1148	1149
Animal Number	905	987	969	1123	958	964	962	954
Sex	M	M	M	M	F	F	F	F
Reason Discontinued	DOT	FS	FS	FS	FS	DOT	FS	FS
Days on Test	9	14	14	14	14	8	14	14
Test Site (Skin)								
Acanthosis	2	3	3	3	3	3	3	3
Chronic Inflammation	2	2	2	2	3	1	2	3
Crusting				1	1			
Dermal Congestion	2	1	2	2	2	3	3	2
Dermal Edema	2	2	2	2	3	2	2	3
Hyperkeratosis	2	2	2	2	3	2	2	3
Kidney				NR			NR	
Congested	3	2	2		2	2		3
Mononuclear Cell Infiltrate, Diffuse		3						2
Liver				NR				
Cyst, Parasitic			2					
Mineralization		2						
Necrosis, Multifocal	3	2	1		1	3	4	2
Pericholangitis	3	2	2		1	2	2	2
Vacuolar Degeneration, Centrilobular		1			1		2	
Spleen				NR	NR	NR	NR	
Congested	2	2	3					3
Urinary Bladder	NR				NR		NR	NR
Hyperplasia, Epithelial		2	2	1		2		

KEY: Acc = Accidental Death
DOT = Died on Test
FS = Final Sacrifice
MS = Moribund Sacrifice
SS = Scheduled Sacrifice
NDT = Tissue Present, No Diagnosis Tendered

TNP = Tissue Not Present
NR = Tissue Present, Not Remarkable
AUT = Autolysis
O-NR = Paired Organ, Unilateral Absence, Tissue Present, Not Remarkable
O- = Unilateral Lesion

Severity

1 = Very Slight
2 = Slight or Small
3 = Moderate
4 = Severe

Westpath Laboratories, Inc.
Project No. 1014

Table 4

Elara Bioresearch Laboratories
Project Number 1443-F
API 78-8

INDIVIDUAL HISTOLOGIC OBSERVATIONS

Control

Accession Number	N225	N226	N227	N228	N229	N230	N231	N232
Animal Number	421	422	423	424	425	426	427	428
Sex	M	F	M	F	M	F	M	F
Reason Discontinued	FS	FS	FS	FS	FS	FS	FS	FS
Days on Test	14	14	14	14	14	14	14	14
LIVER			NR		NR	NR		
Abscess, focal				4			4	
Congested								
Mineralization								
Necrosis, multifocal								
Pericholangitis	1	3						1
Vacuolar Degeneration, centrilobular	3							
KIDNEY	NR	NR	NR	NR	NR	NR	NR	NR
Congested								
Mineralization, focal								
Mononuclear Cell Infiltrate, focal								
Mononuclear Cell Infiltrate, diffuse								
Nephrosis, tubular								
SPLEEN			NR		NR	NR		NR
Congested							3	
Hyperplasia, reactive	2	1		2			2	
URINARY BLADDER	NR	NR	NR	NR	NR	NR	NR	NR
SKIN (Test Site)	NR	NR	NR	NR	NR	NR	NR	NR
Acanthosis								
Acute Inflammation								
Chronic Inflammation								
Crusting								
Deep Pyoderma								
Dermal Congestion								
Dermal Edema								
Epidermal Microabscesses, multifocal								
Hyperkeratosis								
Liquefactive Degeneration								
Necrolysis, epidermal								
Parakeratosis								
OTHER LESIONS	TNP	TNP	TNP	TNP	TNP	TNP	TNP	TNP
LUNG								
Atelectasis	NR	NR	NR		NR	NR	NR	NR
STOMACH								
Congestion, mucosal					2			
Lymphoid Hyperplasia, submucosal								

KEY: Acc = Accidental Death
DOT = Died on Test
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MS = Moribund Sacrifice
SS = Scheduled Sacrifice
NDT = Tissue Present, No Diagnosis Tendered

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O-NR = Paired Organ, Unilateral Absence, Tissue Present, Not Remarkable
O- = Unilateral Lesion

Severity

1 = Very Slight
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4 = Severe

Analysis of Feed

The guaranteed analyses of feed for Purina Guinea Pig Chow®, Purina Formulab Chow®, and Purina Rabbit Chow®, as provided on the manufacturer's labels, are listed below. No additional analyses of feed were made.

Guaranteed Analysis of Feed

	Type of Purina® Chow		
Nutritional Content	Purina Guinea Pig Chow® 5025 (%)	Purina Formulab Chow® 5008 (%)	Purina Rabbit Chow, Checkers® 5301 (%)
Crude protein, minimum	18.0	23.0	16.0
Crude fat, minimum	4.0	6.5	2.0
Crude fiber, maximum	16.0	4.0	18.0
Ash, maximum	9.0	8.0	9.0
Added minerals, maximum	3.5	2.5	3.0

Triage of 8(e) Submissions

Date sent to triage: 2/5/96

NON-CAP (CAP)

Submission number: 12539A

TSCA Inventory: (Y) N D

Study type (circle appropriate):

Group 1 - Dick Clements (1 copy total)

ECO AQUATO

Group 2 - Ernie Falke (1 copy total)

ATOX (SBTOX) SEN w/NEUR

Group 3 - Elizabeth Margosches (1 copy each)

STOX CTOX EPI RTOX GTOX

STOX/ONCO CTOX/ONCO IMMUNO CYTO NEUR

Other (FATE, EXPO, MET, etc.): _____

Notes:

THIS IS THE ORIGINAL 8(e) SUBMISSION; PLEASE REFILE AFTER TRIAGE DATABASE ENTRY

For Contractor Use Only

entire document: (0) 1 2 **pages** 1,2 **pages** 1-3, tabs.

Notes:

Contractor reviewer : LPS **Date:** 5/11/95

CECATS\TRIAGE TRACKING DBASE ENTRY FORM

CECATS DATA:
Submission # 8EHQ- 0992-12539 SEQ. A

TYPE: INT. SUPP FLWP

SUBMITTER NAME: Phillips Petroleum Company

SUB. DATE: 08/24/92 OTS DATE: 09/08/92 CSRAD DATE: 03/20/95

INFORMATION REQUESTED: FLWP DATE:
0501 NO INFO REQUESTED
0502 INFO REQUESTED (TECH)
0503 INFO REQUESTED (VOL ACTIONS)
0504 INFO REQUESTED (REPORTING RATIONALE)

DISPOSITION:
0620 REFER TO CHEMICAL SCREENING
0678 CAP NOTICE

VOLUNTARY ACTIONS:
0401 NO ACTION REPORTED
0402 STUDIES PLANNED/UNDERWAY
0403 NOTIFICATION OF WORKER/OTHERS
0404 LABEL/MSDS CHANGES
0405 PROCESS/HANDLING CHANGES
0406 APP./USE DISCONTINUED
0407 PRODUCTION DISCONTINUED
0408 CONFIDENTIAL

CHEMICAL NAME:

CAS#
68553-00-4

INFORMATION TYPE:		P F C
0201	ONCO (HUMAN)	01 02 04
0202	ONCO (ANIMAL)	01 02 04
0203	CELL TRANS (IN VITRO)	01 02 04
0204	MUTA (IN VITRO)	01 02 04
0205	MUTA (IN VIVO)	01 02 04
0206	REPRO/TERATO (HUMAN)	01 02 04
0207	REPRO/TERATO (ANIMAL)	01 02 04
0208	NEURO (HUMAN)	01 02 04
0209	NEURO (ANIMAL)	01 02 04
0210	ACUTE TOX. (HUMAN)	01 02 04
0211	CHR. TOX. (HUMAN)	01 02 04
0212	ACUTE TOX. (ANIMAL)	01 02 04
0213	SUB ACUTE TOX (ANIMAL)	01 02 04
0214	SUB CHRONIC TOX (ANIMAL)	01 02 04
0215	CHRONIC TOX (ANIMAL)	01 02 04

INFORMATION TYPE:		P F C
0216	EPI/CLIN	01 02 04
0217	HUMAN EXPOS (PROD CONTAM)	01 02 04
0218	HUMAN EXPOS (ACCIDENTAL)	01 02 04
0219	HUMAN EXPOS (MONITORING)	01 02 04
0220	ECO/AQUA TOX	01 02 04
0221	ENV. OCCC/REL/FATE	01 02 04
0222	EMER INCI OF ENV CONTAM	01 02 04
0223	RESPONSE REQEST DELAY	01 02 04
0224	PROD/COMP/CHEM ID	01 02 04
0225	REPORTING RATIONALE	01 02 04
0226	CONFIDENTIAL	01 02 04
0227	ALLERG (HUMAN)	01 02 04
0228	ALLERG (ANIMAL)	01 02 04
0239	METAB/PHARMACO (ANIMAL)	01 02 04
0240	METAB/PHARMACO (HUMAN)	01 02 04

INFORMATION TYPE:		P F C
0241	IMMUNO (ANIMAL)	01 02 04
0242	IMMUNO (HUMAN)	01 02 04
0243	CHEM/PHYS PROP	01 02 04
0244	CLASTO (IN VITRO)	01 02 04
0245	CLASTO (ANIMAL)	01 02 04
0246	CLASTO (HUMAN)	01 02 04
0247	DNA DAM/REPAIR	01 02 04
0248	PROD/USE/PROC	01 02 04
0251	MSDS	01 02 04
0299	OTHER	01 02 04

TRIAGE DATA:

NON-CBI INVENTORY
YES
NO
IN TERMINI

ONGOING REVIEW
YES (DROP/REFER)
NO (CONTINUE)
REFER

SPECIES
RBT

TOXICOLOGICAL CONCERN:
LOW
MED
HIGH

USE:

PRODUCTION:

CAS SR

COMMENTS: NA/NOE

12539A

L

Subacute dermal toxicity in rabbits is of low concern. New Zealand White rabbits (4/sex) received dermal doses of 8000 mg/kg/day (converted from mL/kg assuming a density of 1), 5 days/week for two weeks. Death occurred in 2/8 rabbits. All animals exhibited weight loss and erythema and irritation at the test site. Gross necropsy revealed: hepatic swelling and necrosis (1/8), discolored or congested liver (7/8), pale or congested kidneys (5/8), gastrointestinal hemorrhage (1/8), and enlarged spleen (2/8). Microscopic examination revealed slight to severe multifocal hepatic necrosis (7/8), slight to severe hepatic centrilobular vacuolar degeneration (3/8), and slight epithelial hyperplasia of the urinary bladder mucosa (4/8). In addition, the test material produced slight to moderate acanthosis, chronic inflammation, crusting, dermal congestion and edema, and hyperkeratosis at all test sites.